RMAN을 사용해서 모든 control file 삭제하고 복구

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> control file 3개 중 2개를 삭제하고 RMAN으로 복구

1. **먼저 현재 database 의 DB ID를 조회합니다.**
   a. parameter file을 복구할 때는 무조건 DB id가 필요하지만
   b. control file은 반드시 필요한 것은 아님.
   c. 하지만 필요할 때도 있어서 조회해 두는 것을 권장함

```
shm SYS > select dbid from v$database;

      DBID
----------
1022900107
```

2. **Control file을 생성하는 script를 생성합니다. (혹시 백업 실패할 때 사용하기 위함)**

```
alter database backup controlfile to trace
    as '/home/oracle/create_controlfile_20240307.sql';
```

3. **RMAN으로 접속해서 control file이 자동 백업 되도록 설정합니다.**

```
[shm:~]$ rnc

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connected to target database: SHM (DBID=1022900107) <--- 여기서도 DB ID 확인 가능
using target database control file instead of recovery catalog


#2. control file이 자동 백업 되도록 설정
RMAN> configure controlfile autobackup on;

new RMAN configuration parameters:
CONFIGURE CONTROLFILE AUTOBACKUP ON;
new RMAN configuration parameters are successfully stored
```

- `configure controlfile autobackup on;`

데이터베이스 구조가 자꾸 바뀌기 때문에 CONTROL FILE이 백업 받기 어려움.. 그래서 RMAN으로 앞으로 어떤 파일을 백업 받던 백업 받을 때 마다 control file이 자동으로 백업되어지게 설정하는 것.
이렇게 해두면 앞으로 DB 구조가 변경될 때 마다 RMAN이 controlfile을 자동으로 백업합니다. (ex. tablespace 삭제, tablespace 추가, tablespace 생성 , data file 위치 이동 등 …)
이렇게 안하면 예시의 상황 때 마다 2번을 매번 해야함.

4. **RMAN 에서 data file 중에 아무거나 하나를 백업 받습니다.**

    a. 그래야 autobackup으로 current controlfile을 백업 받을 수 있기 때문!

```
RMAN> backup datafile 13;

Starting backup at 07-MAR-24
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=63 device type=DISK
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00013 name=/u01/app/oracle/oradata/shm/ts5000.dbf
channel ORA_DISK_1: starting piece 1 at 07-MAR-24
channel ORA_DISK_1: finished piece 1 at 07-MAR-24
piece handle=/u01/app/oracle/flash_recovery_area/SHM/backupset/2024_03_07/o1_mf_nnndf
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 07-MAR-24

Starting Control File and SPFILE Autobackup at 07-MAR-24
piece handle=/u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_11
Finished Control File and SPFILE Autobackup at 07-MAR-24

RMAN>
```


마지막에 보면, control file과 spfile이 자동으로 백업 된 것을 확인할 수 있다.

5. **control file의 위치를 확인합니다.**

```
shm SYS > @controlfile

NAME
--------------------------------------------------------------------------------
/u01/app/oracle/oradata/shm/control01.ctl
```

```
/u01/app/oracle/oradata/shm/control02.ctl
/u01/app/oracle/oradata/shm/control03.ctl
```

```
shm SYS > @controlfile

NAME
-------------------------------------------
/u01/app/oracle/oradata/shm/control01.ctl
/u01/app/oracle/oradata/shm/control02.ctl
/u01/app/oracle/oradata/shm/control03.ctl
```

6. **shutdown abort로 DB를 내립니다.**

```
shm SYS > shutdown abort
ORACLE instance shut down.
```

```
shm SYS > shutdown abort
ORACLE instance shut down.
```

7. **모든 control file을 2개만 삭제합니다.**

```
[shm:~]$ oradata
[shm:shm]$
[shm:shm]$ ls *.ctl
control01.ctl  control02.ctl  control03.ctl
[shm:shm]$
[shm:shm]$ rm control01.ctl
[shm:shm]$ rm control02.ctl
[shm:shm]$
[shm:shm]$ ls *.ctl
control03.ctl
```

```
[shm:~]$ oradata
[shm:shm]$
[shm:shm]$ ls *.ctl
control01.ctl  control02.ctl  control03.ctl
[shm:shm]$
[shm:shm]$ rm control01.ctl
[shm:shm]$ rm control02.ctl
[shm:shm]$
[shm:shm]$ ls *.ctl
control03.ctl
```

8. **DB startup을 시도합니다. ←—NOMOUNT 단계 까지만 올라감**

```
shm SYS > startup
ORACLE instance started.

Total System Global Area  636100608 bytes
Fixed Size                  1338392 bytes
Variable Size             184550376 bytes
Database Buffers          444596224 bytes
Redo Buffers                5615616 bytes
```

```
ORA-00205: error in identifying control file, check alert log for more info


** alter log file **

ALTER DATABASE   MOUNT
ORA-00210: cannot open the specified control file
ORA-00202: control file: '/u01/app/oracle/oradata/shm/control02.ctl'
ORA-27037: unable to obtain file status
Linux Error: 2: No such file or directory
Additional information: 3
ORA-00210: cannot open the specified control file
ORA-00202: control file: '/u01/app/oracle/oradata/shm/control01.ctl'
ORA-27037: unable to obtain file status
Linux Error: 2: No such file or directory
Additional information: 3
ORA-205 signalled during: ALTER DATABASE   MOUNT...
```


9. **다시 DB를 shutdown abort로 내린 후 startup nomount 단계로 다시 올림**

```
shm SYS > shutdown abort
ORACLE instance shut down.
shm SYS >
shm SYS > startup nomount
ORACLE instance started.

Total System Global Area  636100608 bytes
Fixed Size                  1338392 bytes
Variable Size             184550376 bytes
Database Buffers          444596224 bytes
Redo Buffers                5615616 bytes
```

```
shm SYS > shutdown abort
ORACLE instance shut down.
shm SYS >
shm SYS > startup nomount
ORACLE instance started.

Total System Global Area  636100608 bytes
Fixed Size                  1338392 bytes
Variable Size             184550376 bytes
Database Buffers          444596224 bytes
Redo Buffers                5615616 bytes
```

10. **RMAN으로 접속합니다.**

```
[shm:~]$ rnc

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connected to target database: SHM (not mounted)
using target database control file instead of recovery catalog

RMAN>

RMAN>
```



```
[shm:~]$ rnc

Recovery Manager: Release 11.2.0.1.0 - Production on Thu Mar 7 11:11:39 2024

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connected to target database: SHM (not mounted)
using target database control file instead of recovery catalog

RMAN>
```

지금까지 mount 상태에서 RMAN으로 접속 했었음.
왜냐하면, 복구는 항상 MOUNT 상태에서 진행해야 하기 때문
하지만 위와 같이 NOMOUNT 상태에서도 RMAN으로 접속할 수 있음.

11. **RMAN으로 control file을 복원합니다.**

```
RMAN> restore controlfile from autobackup;

Starting restore at 07-MAR-24
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=63 device type=DISK

recovery area destination: /u01/app/oracle/flash_recovery_area
database name (or database unique name) used for search: SHM
channel ORA_DISK_1: AUTOBACKUP /u01/app/oracle/flash_recovery_area/SHM/autobackup/202
AUTOBACKUP search with format "%F" not attempted because DBID was not set
channel ORA_DISK_1: restoring control file from AUTOBACKUP /u01/app/oracle/flash_reco
channel ORA_DISK_1: control file restore from AUTOBACKUP complete
output file name=/u01/app/oracle/oradata/shm/control01.ctl
output file name=/u01/app/oracle/oradata/shm/control02.ctl
```

```
output file name=/u01/app/oracle/oradata/shm/control03.ctl
Finished restore at 07-MAR-24
```

```
RMAN> restore controlfile from autobackup;

Starting restore at 07-MAR-24
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=63 device type=DISK

recovery area destination: /u01/app/oracle/flash_recovery_area
database name (or database unique name) used for search: SHM
channel ORA_DISK_1: AUTOBACKUP /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_1162985232_lyl9
j0my_.bkp found in the recovery area
AUTOBACKUP search with format "%F" not attempted because DBID was not set
channel ORA_DISK_1: restoring control file from AUTOBACKUP /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_0
3_07/o1_mf_s_1162985232_lyl9j0my_.bkp
channel ORA_DISK_1: control file restore from AUTOBACKUP complete
output file name=/u01/app/oracle/oradata/shm/control01.ctl
output file name=/u01/app/oracle/oradata/shm/control02.ctl
output file name=/u01/app/oracle/oradata/shm/control03.ctl
Finished restore at 07-MAR-24
```

알아서 auto backup 본에서 control file을 가져옴.
그래서 마지막 메시지를 보면, control file 3개 모두 복원했다는 것을 확인할 수 있음

12. **DB를 alter database mount로 올립니다.**

```
RMAN> alter database mount;

database mounted
released channel: ORA_DISK_1
```

```
RMAN> alter database mount;

database mounted
released channel: ORA_DISK_1
```

※ **control file을 복원 했다고 자동으로 mount 되는 것이 아니기 때문에 직접 mount 단계로 올려줘야함.**

13. **RMAN으로 recover database를 수행하여 복구합니다.**

```
RMAN> recover database;

Starting recover at 07-MAR-24
Starting implicit crosscheck backup at 07-MAR-24
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=63 device type=DISK
Crosschecked 15 objects
Finished implicit crosscheck backup at 07-MAR-24

Starting implicit crosscheck copy at 07-MAR-24
using channel ORA_DISK_1
Finished implicit crosscheck copy at 07-MAR-24

searching for all files in the recovery area
cataloging files...
cataloging done

List of Cataloged Files
```

```
=======================
File Name: /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_1162
File Name: /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_1162

using channel ORA_DISK_1

starting media recovery

archived log for thread 1 with sequence 1 is already on disk as file /u01/app/oracle/
archived log file name=/u01/app/oracle/oradata/shm/redo01.log thread=1 sequence=1
media recovery complete, elapsed time: 00:00:01
Finished recover at 07-MAR-24
```

```
RMAN> recover database;

Starting recover at 07-MAR-24
Starting implicit crosscheck backup at 07-MAR-24
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=63 device type=DISK
Crosschecked 15 objects
Finished implicit crosscheck backup at 07-MAR-24

Starting implicit crosscheck copy at 07-MAR-24
using channel ORA_DISK_1
Finished implicit crosscheck copy at 07-MAR-24

searching for all files in the recovery area
cataloging files...
cataloging done

List of Cataloged Files
=======================
File Name: /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_1162983941_lyl87oof_.bkp
File Name: /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_1162985232_lyl9j0my_.bkp

using channel ORA_DISK_1

starting media recovery

archived log for thread 1 with sequence 1 is already on disk as file /u01/app/oracle/oradata/shm/redo01.log
archived log file name=/u01/app/oracle/oradata/shm/redo01.log thread=1 sequence=1
media recovery complete, elapsed time: 00:00:01
Finished recover at 07-MAR-24
```

※ 복원한 **control file**이 옛날 파일이기 때문에 **recover(복구)**를 해서 최신 파일로 만들어줘야 하기 때문에 복구를 수행한다.

14. **DB를 resetlogs 옵션을 사용하여 OPEN 단계로 올립니다.**

```
RMAN> alter database open resetlogs;

database opened
```

```
RMAN> alter database open resetlogs;

database opened
```

control file은 모든 DB에 대한 정보를 알고 있는 선생님 같은 존재임.
그래서 control file을 복원해 왔다는 의미는. 새로운 선생님이 부임했다는 것.
따라서 다시 reset을 해야하기 때문에 resetlogs를 해주는 것.

하지만 학생과 비슷한 data file 은 사라지는게 아님.

선생님이 바뀐다고 해서 학생들도 초기화되는게 아니기 때문이다.

15. resetlogs로 DB를 열었으면 반드시 FULL BACKUP 을 수행해야 합니다.

```
RMAN> backup database;

Starting backup at 07-MAR-24
using channel ORA_DISK_1
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00001 name=/u01/app/oracle/oradata/shm/system01.dbf
input datafile file number=00002 name=/u01/app/oracle/oradata/shm/sysaux01.dbf
input datafile file number=00006 name=/u01/app/oracle/oradata/shm/users02.dbf
input datafile file number=00005 name=/u01/app/oracle/oradata/shm/example01.dbf
input datafile file number=00003 name=/u01/app/oracle/oradata/shm/undotbs01.dbf
input datafile file number=00007 name=/u01/app/oracle/oradata/shm/ts01.dbf
input datafile file number=00008 name=/u01/app/oracle/oradata/shm/ts02.dbf
input datafile file number=00013 name=/u01/app/oracle/oradata/shm/ts5000.dbf
input datafile file number=00014 name=/u01/app/oracle/oradata/shm/ts6000.dbf
input datafile file number=00004 name=/u01/app/oracle/oradata/shm/users01.dbf
input datafile file number=00009 name=/u01/app/oracle/oradata/shm/ts03.dbf
input datafile file number=00010 name=/u01/app/oracle/oradata/shm/cuppang01.dbf
input datafile file number=00011 name=/u01/app/oracle/oradata/shm/cuppang02.dbf
input datafile file number=00012 name=/u01/app/oracle/oradata/shm/cuppang03.dbf
channel ORA_DISK_1: starting piece 1 at 07-MAR-24
channel ORA_DISK_1: finished piece 1 at 07-MAR-24
piece handle=/u01/app/oracle/flash_recovery_area/SHM/backupset/2024_03_07/o1_mf_nnndf
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:15
Finished backup at 07-MAR-24

Starting Control File and SPFILE Autobackup at 07-MAR-24
piece handle=/u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_11
Finished Control File and SPFILE Autobackup at 07-MAR-24
```

```
RMAN> backup database;

Starting backup at 07-MAR-24
using channel ORA_DISK_1
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00001 name=/u01/app/oracle/oradata/shm/system01.dbf
input datafile file number=00002 name=/u01/app/oracle/oradata/shm/sysaux01.dbf
input datafile file number=00006 name=/u01/app/oracle/oradata/shm/users02.dbf
input datafile file number=00005 name=/u01/app/oracle/oradata/shm/example01.dbf
input datafile file number=00003 name=/u01/app/oracle/oradata/shm/undotbs01.dbf
input datafile file number=00007 name=/u01/app/oracle/oradata/shm/ts01.dbf
input datafile file number=00008 name=/u01/app/oracle/oradata/shm/ts02.dbf
input datafile file number=00013 name=/u01/app/oracle/oradata/shm/ts5000.dbf
input datafile file number=00014 name=/u01/app/oracle/oradata/shm/ts6000.dbf
input datafile file number=00004 name=/u01/app/oracle/oradata/shm/users01.dbf
input datafile file number=00009 name=/u01/app/oracle/oradata/shm/ts03.dbf
input datafile file number=00010 name=/u01/app/oracle/oradata/shm/cuppang01.dbf
input datafile file number=00011 name=/u01/app/oracle/oradata/shm/cuppang02.dbf
input datafile file number=00012 name=/u01/app/oracle/oradata/shm/cuppang03.dbf
channel ORA_DISK_1: starting piece 1 at 07-MAR-24
channel ORA_DISK_1: finished piece 1 at 07-MAR-24
piece handle=/u01/app/oracle/flash_recovery_area/SHM/backupset/2024_03_07/o1_mf_nnndf_TAG20240307T111924_lyl91dr7_.b
kp tag=TAG20240307T111924 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:15
Finished backup at 07-MAR-24

Starting Control File and SPFILE Autobackup at 07-MAR-24
piece handle=/u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_1162984779_lyl91vw6_.bkp comment=
NONE
Finished Control File and SPFILE Autobackup at 07-MAR-24
```

16. 제출 결과

```
shm SYS > select name from v$controlfile;

NAME
--------------------------------------------------------------------------------
/u01/app/oracle/oradata/shm/control01.ctl
/u01/app/oracle/oradata/shm/control02.ctl
/u01/app/oracle/oradata/shm/control03.ctl
```



```
RMAN> list backup of controlfile;


List of Backup Sets
===================


...

BS Key  Type LV Size       Device Type Elapsed Time Completion Time
------- ---- -- ---------- ----------- ------------ ---------------
14      Full   20.23M      DISK        00:00:00     07-MAR-24
        BP Key: 14   Status: AVAILABLE  Compressed: NO  Tag: TAG20240307T111939
        Piece Name: /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_
  Control File Included: Ckp SCN: 98395963    Ckp time: 07-MAR-24

BS Key  Type LV Size       Device Type Elapsed Time Completion Time
------- ---- -- ---------- ----------- ------------ ---------------
16      Full   20.23M      DISK        00:00:00     07-MAR-24
        BP Key: 16   Status: AVAILABLE  Compressed: NO  Tag: TAG20240307T113359
        Piece Name: /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_
  Control File Included: Ckp SCN: 98396418    Ckp time: 07-MAR-24

BS Key  Type LV Size       Device Type Elapsed Time Completion Time
------- ---- -- ---------- ----------- ------------ ---------------
18      Full   20.23M      DISK        00:00:00     07-MAR-24
        BP Key: 18   Status: AVAILABLE  Compressed: NO  Tag: TAG20240307T113421
        Piece Name: /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_
  Control File Included: Ckp SCN: 98396452    Ckp time: 07-MAR-24
```

```
BS Key   Type LV Size        Device Type Elapsed Time Completion Time
-------  ---- -- ---------- ------------ ------------ ---------------
14       Full   20.23M     DISK         00:00:00     07-MAR-24
         BP Key: 14    Status: AVAILABLE  Compressed: NO   Tag: TAG20240307T111939
         Piece Name: /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_1162984779_lyl91vw6_.bkp
   Control File Included: Ckp SCN: 98395963     Ckp time: 07-MAR-24

BS Key   Type LV Size        Device Type Elapsed Time Completion Time
-------  ---- -- ---------- ------------ ------------ ---------------
16       Full   20.23M     DISK         00:00:00     07-MAR-24
         BP Key: 16    Status: AVAILABLE  Compressed: NO   Tag: TAG20240307T113359
         Piece Name: /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_1162985639_lyl9wqg7_.bkp
   Control File Included: Ckp SCN: 98396418     Ckp time: 07-MAR-24

BS Key   Type LV Size        Device Type Elapsed Time Completion Time
-------  ---- -- ---------- ------------ ------------ ---------------
18       Full   20.23M     DISK         00:00:00     07-MAR-24
         BP Key: 18    Status: AVAILABLE  Compressed: NO   Tag: TAG20240307T113421
         Piece Name: /u01/app/oracle/flash_recovery_area/SHM/autobackup/2024_03_07/o1_mf_s_1162985661_lyl9xfcp_.bkp
   Control File Included: Ckp SCN: 98396452     Ckp time: 07-MAR-24
```